JOURNAL OF
MATHEMATICS
EDUCATION
AT TEACHERS COLLEGE

A Century of Leadership in Mathematics and Its Teaching

Forward-Thinking Orientations for Mathematics Education

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JOURNAL OF **MATHEMATICS EDUCATION** AT TEACHERS COLLEGE | SPRING 2021 | VOLUME 12, ISSUE 1

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NOTES FROM THE FIELD

Humanity and Practicality During the Emergency Conversion to Online Learning

Christopher R. H. Hanusa
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When the pandemic started in Spring 2020, I was one month into teaching two classes: a standards-based grading version of integral calculus and a project-based course on mathematical modeling. My approach for the emergency conversion to online learning involved choosing humane and practical options at every step to get everyone through the classes despite the difficulties. The first thing I did was reduce expectations for my students and myself in both courses to allow time for self care. In addition, I gave students the flexibility that they needed to weather the eventual sickness and deaths in our communities.

In the modeling course, we moved directly to the material on epidemiology. What a motivation for learning course material during a pandemic! Students collaborated in groups to develop computer simulation models of the spread of disease in the real world. Class consisted of my checking in with each group for about five to seven minutes to help students make progress on their projects. I pared the list of standards to the essentials in the calculus course by eliminating less-applicable concepts and simplifying the scoring system to a "pass" versus "progressing" dichotomy. This enabled students to focus on learning the material instead of worrying about their grades.

In transitioning to remote learning, we needed practical online replacements for face-to-face interaction. The online discussion board Campuswire allowed students to interact with each other outside of class, including a forum where they could ask and answer each other's questions. I received more direct messages on Campuswire than email messages, which made me believe that Campuswire reduced the friction of communication among us.

In addition to building community through Campuswire, I used Flipgrid for students to present and exchange feedback on their projects. I plan to continue using this video discussion tool. Before the pandemic, we would have to rush to fit all the presentations into one class period and deal with the technology issues that always show up during transitions. My students now use Flipgrid to record and re-record their presentations as desired, which are therefore much better prepared. Fellow students give dedicated feedback on these presentations, which we never had time for before.

I also leveraged Flipgrid for my Fall 2020 course in mathematical computing. In one project, students used Mathematica to design, prototype, and print a 3D sculpture using three-dimensional coordinate systems, mathematical transformations, and functional programming. When students received their 3D printed model in the mail, I asked them to record themselves unboxing their models and share them on Flipgrid. The students opened their packages and shared their excitement about seeing their project for the first time. Sharing this moment of humanity was a highlight for everyone.

Some students shared that they valued the empathy-based structure of my classes, including one who remarked, "I really enjoyed getting up every Monday and Wednesday morning to be part of your class. It really did brighten up my day in these hard times. Thank you for being a caring professor."